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#499

COUNTER ATTACK

U.S. DEPT. OF AGRICULTURE
FOREST SERVICE

MAR 10 1964

CURRENT SERIAL



PA-499
U.S. Dept. of Agriculture
Forest Service
APRIL 1962

The fight against forest insects and diseases



PS-1430

One plane and a load of insecticide
against countless billions of crawling tree
destroyers.

COUNTERATTACK—1962

The fight against forest insects and diseases

Introduction to a National Problem

Death stalks forest trees in many forms, but the most ravaging killers are insects and diseases. They don't kill and maim with the swift dramatic sweep of uncontrolled fire. They don't spread terror in their path. They don't often make headlines. But slowly, methodically they sometimes lay waste whole areas and threaten certain species with extinction.

On the 664 million acres of forest land in the United States, enough timber is destroyed each year by insects alone to build well over one million houses. This includes not only the sawtimber

killed outright, but the very heavy loss in growth suffered by infested trees that remain alive. The Nation can't afford such annual losses when more wood and suitable recreation space are needed for an increasing population.

Disease has virtually wiped out the American chestnut and is pounding relentlessly at the American elm; white pine is still under heavy attack from blister rust; fungi, bacteria, and adverse environmental conditions affect the health of each of the more than 1,000 tree species in the country.



Some forest owners look with despair at the wilting leaves and bare tops of their trees. Others know there are remedies that can help cure the ailment in the same way that medicine works on an ailing body. How can we cope with this menace? What steps can we take to control or suppress it?

The U.S. Department of Agriculture's Forest Service has some of the answers to these questions. These answers come from the long experience of managing 186 million acres of National Forests, where fighting insects and disease is a major campaign. Since 1947, with the passage of the Forest Pest Control Act, the campaign has been extended beyond National Forest boundaries. On a cooperative, cost-sharing basis with State agencies and

private landowners, the Forest Service stands ready to aid in preventing, detecting, evaluating, and suppressing outbreaks anywhere in the country.

Keeping a forest healthy helps to reduce insect problems and tree sickness. If, for instance, a dense stand is thinned, susceptible or damaged trees removed, and the woods kept free of slash and stored logs, the danger from bark beetles, wood borers, or fungus spores is correspondingly less.

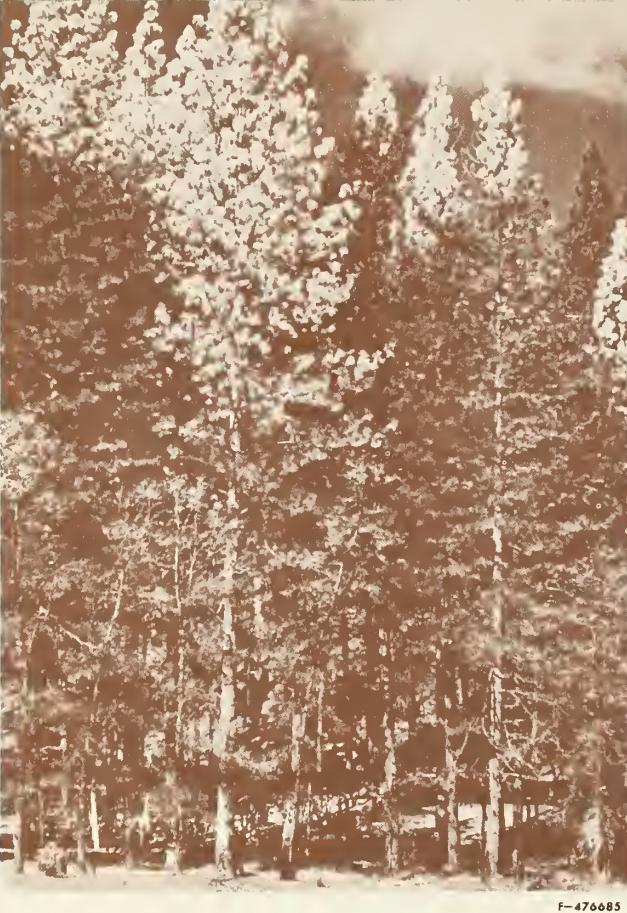
If, despite all precautions, an outbreak does occur, then early detection is important. While this alone does not provide a cure, it puts into the hands of the proper authorities a potent weapon, for when the enemy has not yet reached full strength he may more easily be contained.

The fight to keep insects and diseases within reasonable bounds goes on endlessly in Forest Service research laboratories and in the field. Sometimes the researcher triumphs; sometimes the forest pest has its way. But as new techniques are perfected, new discoveries made, and greater co-operation develops among all forest owners, the menace will be cut down to a size where it is no longer a thorny problem and where pest-caused losses do not run into astronomical figures. The purpose of this booklet is to inform the public of current major insect and disease conditions on the National Forests and elsewhere, and the steps taken to combat them.



The spruce budworm, one of the chief enemies of valuable spruce-fir forests.

PS-1045



The mark of death. Bleached-out foliage is characteristic of trees killed by bark beetles—a situation that might have been prevented by the prompt disposal or treatment of forest debris.

Action Plans Approved for 1962

On February 1, 1962, the Federal Pest Control Review Board approved plans developed by the Forest Service and cooperating agencies to control destructive insects and diseases on the Nation's forest lands.

In another development, a special committee of the National Academy of Sciences, acting independently of Government agencies, concluded that pesticides were the only effective method of fighting epidemics under certain conditions. It recognized their valuable use, but cautioned that care be exercised in applying them where they might pose some hazard to wildlife.



PN-6800

A closeup of quiet death in the forest—300 years of ponderoso pine growth ended in a few weeks by the girdling action of western pine beetles.

The Bark Beetle Front

Bark beetles continue to be the most destructive forest pests in the United States. Severe large-scale outbreaks cover parts of the West and South. Lodgepole pine forests in some of the Western States are suffering the worst epidemic in 30 years. More than 600,000 trees have already been attacked and killed in 57 infestation centers. Not only are trees destroyed, but recreation and esthetic values are badly damaged.

Major campaigns will be waged against the mountain pine beetle epidemic in Utah and western Wyoming; the Engelmann spruce beetle in Colorado, Wyoming, and New Mexico; the western pine

beetle in California and Oregon; the Black Hills beetle in Wyoming, South Dakota, and parts of the central Rockies; and the southern pine beetle and black turpentine beetle in the Southern and Southeastern States. Areas scheduled for treatment include National Forests, National Parks, other Federal lands, and State and private holdings.

The weapons in the fight have proved effective over the years. Where possible, infested trees are logged. If this can't be done, the trees are felled and the beetle broods in them destroyed. Sometimes green trees are cut to attract beetles, after which these "trap" trees are usually logged or chemically treated. Hand-operated spraying equipment containing oil solutions or water emulsions capable of penetrating bark and killing beetles is another insect suppressor.



PS-622

Too late to save—a high-value virgin pine stand turned into a ghost forest by bark beetles.

Air Attack on Leaf-Eaters

Defoliators, foliage eating insects, stepped up their destructive activities in several areas of the United States, particularly in the Rocky Mountain and Intermountain States. Montana, Idaho, Washington, Colorado, and New Mexico reported the most widespread infestations of the spruce budworm in the past 10 years. Severe attacks hit spruce-fir timber in northern Minnesota, and budworm populations increased outside sprayed areas in Maine.

Other defoliators inflicting heavy damage on our timber resource include the western hemlock looper which infested about 70,000 acres of hemlock stands in western Oregon; the pine tussock moth which broke out suddenly in Minnesota and Wisconsin, affecting stands of jack pine, red pine, and white spruce; the larch casebearer, relatively new to Idaho and now invading Montana; the jack pine





budworm, remaining at high levels of infestation in parts of Wisconsin; and the elm spanworm, causing serious hardwood defoliation in North Carolina, Tennessee, and Georgia.

An oil solution of DDT sprayed on forest stands by low-flying aircraft is the only effective method yet known to fight these insects. The usual formula of one pound DDT per gallon per acre will be reduced by half to minimize possible damage to fish in areas along lakes and streams. These reduced dosages provide added protection to wildlife, though the effectiveness of the control measure is somewhat lessened. Spruce budworms will receive the brunt of the air drops. In the two largest aerial projects, about 900,000 acres in Montana and New Mexico are scheduled for spraying.



F-462097

With the tremendous demand for outdoor recreation, America cannot afford to have the attractiveness and usefulness of recreation areas blighted by the ravages of forest insects and diseases.

Stamping Out Blister Rust

Forest diseases are even more destructive than insects. Each year, infections kill enough trees and slow down enough timber growth to supply lumber for 2 million five-room houses.

One of the great tree killers of the past, which is steadily being brought under greater control, is white pine blister rust. Uprooting plants that harbor the fungus before it transfers to the tree is still the only possible way of protecting the white pine resource in many parts of the country. Recent discovery of an antibiotic fungicide marked a major breakthrough in controlling this disease. Applied from the air in early spring or late fall, it was found to prevent infection and heal diseased western white pine.

In 1962, this new fungicide will be sprayed from helicopters on 60,000 acres of infected, but still immensely valuable, white pine in northern Idaho. It will also be applied to the bases of individual trees by hand-operated sprayers on an additional 14,000 acres in the same State.



PN-1

Sick trees often can be healed. This diseased western white pine sapling is being treated with antibiotic spray to rid it of blister rust.



F-492704

New techniques and modern equipment. Mist blower in a red pine plantation laying down a spray to suppress the European pine shoot moth.

Hunting Down Other Tree Killers

To protect costly investments in pine plantations, about 5,000 acres in Wisconsin and Michigan will be aerially sprayed with the normal one pound of DDT per acre to suppress the Saratoga spittlebug. A lesser acreage in New York will be hand sprayed with a lindane solution to guard plantations against the white pine weevil.

About 4,000 trees infected with the quick-killing oak wilt disease are scheduled to be felled and treated with various chemicals as a control measure.

Coal-tar creosote applied by hand to each of 102,000 fresh pine stumps will mark the effort to control annosus root rot. This disease attacks pine plantations. Airborne spores infect stumps of newly cut trees, work down to the roots, and eventually infect and kill living trees nearby.



Liquid ammunition ready for the counterattack against tree-killing bark beetles.

Planning the Counterattack

All projected operations are preceded by long and careful preparations. First there are the annual ground and aerial surveys conducted by the Forest Service and by cooperating State agencies and private landowners. Such reconnaissance and additional information from various other sources highlight the trouble spots in the Nation's woodlands and set the stage for suppressive action.

Once the report of an epidemic is in, the U.S. Forest Service and cooperating forest-pest action groups go to work on it. Experts, often aided by State and other Federal agencies, look over the situation. How serious is it? How fast and how far will it spread? How much damage will it cause? If it's an epidemic, has it just started, is it near its peak, or is it on the wane? What is the best counterattack? Should chemicals, predators, virus spray, parasites, salvage logging, or some other suppressive method be used? Can nature take care of this infestation alone?

The situation dictates the plan of attack. When that's decided, then the cost of the project is determined. Is it worth the price? Will the public benefit from this effort or will the adverse effects

override the cost? Cooperating States and private agencies take part in studying this cost-benefit relationship.

Under extreme epidemic conditions, especially where leaf-eating insects are active, chemical spraying by low-flying aircraft may be necessary. This, too, requires long, careful planning. Consideration is given to all foreseeable consequences. Because the health of people and wildlife may be involved, Federal and State agencies are called in for aid and advice—the Public Health Service, the Food and Drug Administration, the Weather Bureau, public fish and game agencies. Precautions are set up for aircraft, spray mixtures, and numerous other details. Safeguards are provided for other forest values such as water and recreation areas. These and other preparations precede the actual spraying flights.

Only when evidence shows that the benefits of a suppression project will exceed its cost, when all safety requirements to other forest resources are met, and when plans are approved by the responsible agency, is the go-ahead signal given. The results of chemical attack from the air or on the

ground are often very satisfactory. Sometimes a price is exacted for this—slight and temporary damage to fish and other wildlife—but when weighed in the balance it is indeed a small price to pay for saving a forest by checking an epidemic.

With the encouraging approval of the Federal Pest Control Review Board and the objective findings of the National Academy of Sciences, the Forest Service and its cooperators, both State and private, are ready to hit hard on all major tree disease and insect fronts in 1962.



F-4373B

The old, tested, and still widely-used way of fighting white pine blister rust—uprooting the plants that spread the disease.



F-462751, 471058, 482299

Three-pronged counterattack—hand spraying,
salvage, logging, and aerial
spraying.





Growth Through Agricultural Progress